

# ***IFIDI JOSHUA TENADOU***

**MATRIC NO:  
18/ENG02/044**

**DEPARTMENT:  
COMPUTER ENGINEERING**

**COLLEGE:  
ENGINEERING**

# Design using the software development cycle

## Planning

This software should be able to regulate water levels depending on various factors such as weather predictions and soil moisture levels. This is possible because the software programs communicate with the irrigation controls and lets the system know when the landscape or farm needs more water. Automated and customizable schedules make it possible to irrigate throughout the lifecycle of a crop.

The system knows when to start irrigating because of its specially designed sensors. The sensors play an important role in gathering useful data about the weather, temperature, soil moisture levels, humidity and other factors. It uses this data to know whether to irrigate or reschedule irrigation.

- Monitors soil moisture and weather using powerful graphing interface with data from the sensors
- Checks if irrigation of the soil is needed or not and makes decision
- The system checks if the water in the reservoir is enough for irrigation
- The system triggers an alarm, sends a text or email alert
- The sprinklers are activated and the farm is irrigated

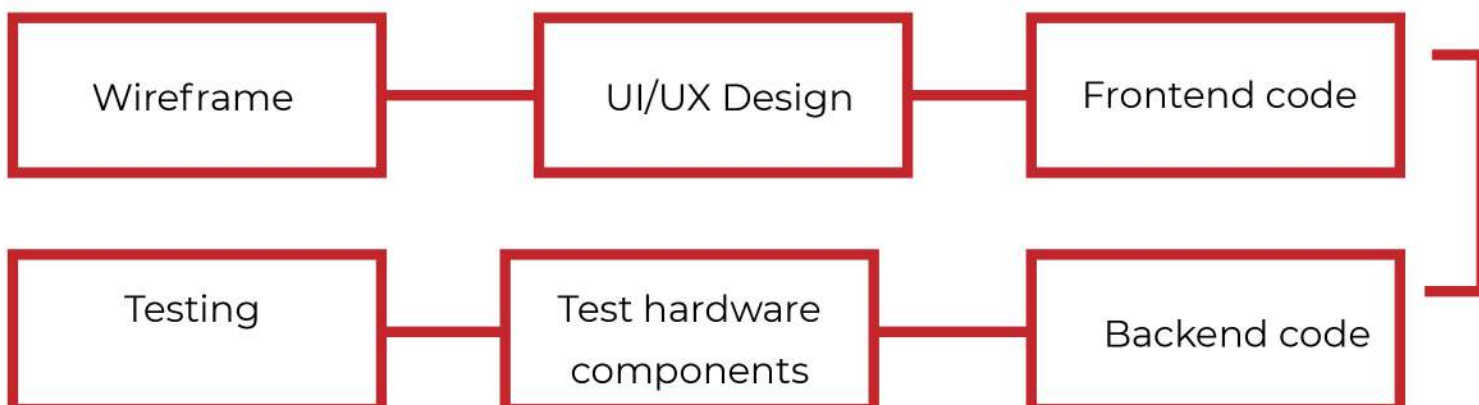
## Requirements

Requirements to make this project succeed are:

- A dynamic web app with a nice welcoming User interface
- Password protected for the user
- Data types include strings, float and integers.
- Sprinklers and a tank for water
- Sensors to get readings from soil and atmosphere

## Designing/Implementation

This is the design stage where the Web app will be develop, First and foremost the wireframe and User interface(UI) will be design when it is accepted The development team will start coding. The front-end developers implements the UI, then the backend developers responsible for writing algorithms / Codes to link the software to the hardware.



## Testing

This is the testing stage , the software is put out for a selected few to test, it is tested at different weather conditions to check its result. It is also tested when the tank is almost empty to check if designed results are gotten

## Deployment

At this stage the software is ready and then released to the students in charge of the farm to use and control the farm irrigation system without much stress

## Maintenance

The web app and hardware used on the farm are checked regularly for bugs that may occur during use or suggestions pointed out by users to improve services. New hardware part might be put in as farm size increases.

## SOFTWARE FEATURES

- Collects data from soil, weather and atmosphere
- Real-time local weather from public or private weather stations
- water monitoring
- smart irrigation scheduling control
- Alarm and Notification feature
- Sprinklers control

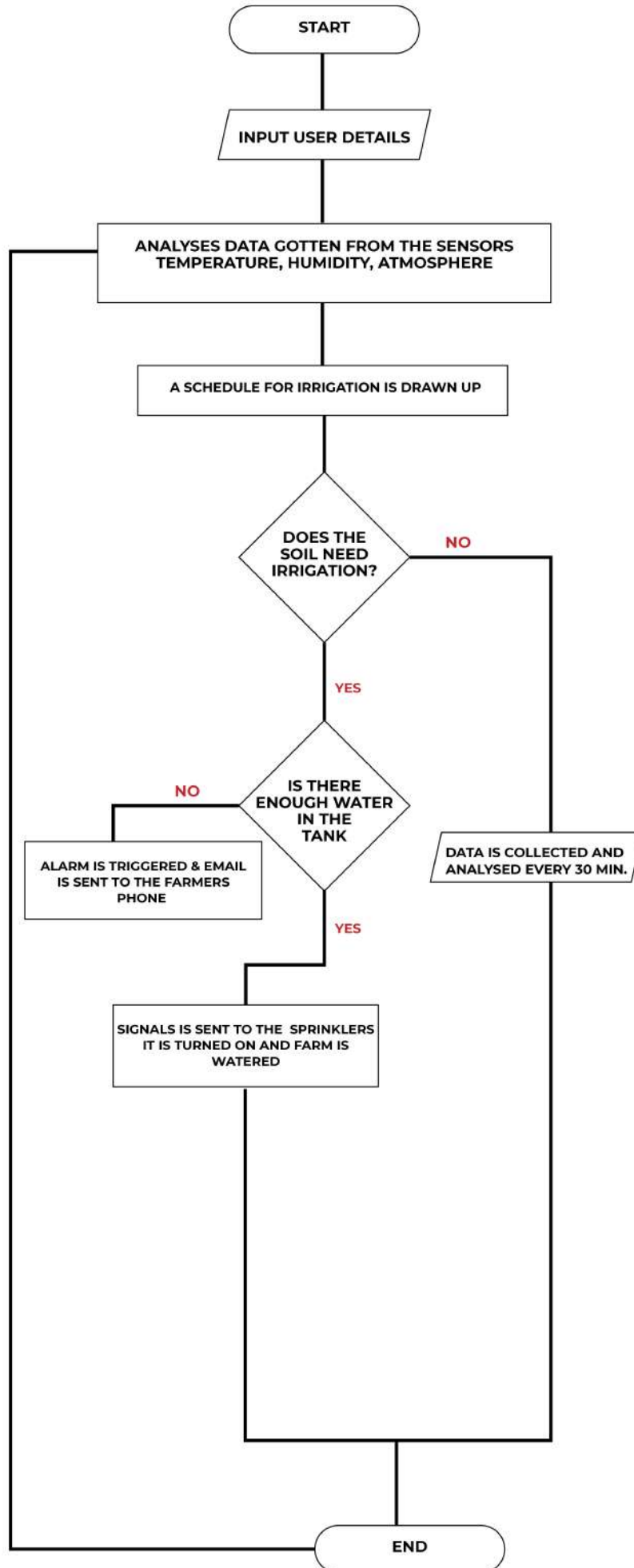
## HARDWARE FEATURES

- Sensors, Water Tank, Pipes, Sprinklers

## ALGORITHM

1. Input user data (name, age, address, Contact info, Password)
2. Software checks the temperature, humidity, water level
3. Based on result , The software make schedules
4. The system checks the water tank , if there is enough water to irrigate then alerts the farmer if water is needed
5. The system sends signal to the sprinklers and turns it on then irrigates the farm
6. If there is no water in the tank. An alarm is triggered and an email alert is sent to the user
7. It repeats process again in the morning.

## FLOWCHART



## TOP-DOWN DESIGN

